

CTCGCTCCAAGTTGTCCAGCCGGGACCGCCTCGGGGTGTCCAGCCGGCTCGCGAGCCCTCTCTGGGGGGGGGCGGGGGCGGCTCGGGG 90
 GCGCCCCCTGAGCAGAAAAACAGGAAGAACCAGGCTCGGTCCAGTGGCACCCAGCTCCCTACCTCTGTCCAGCGCCTGGCCTGTGGCA 180
 GGCATTCCCAGCGTCCCCGACTGTGACCACTTGCTCAGTGTCCCTCTCACCTGCCTCAGTTTCCCTCTCGCGGGCGATGCCGGGGCGAG 270
 H A G R

Sma I
 GCTCTCTGGTTTCTCTGGGGGCAATTCACGGCTGTGATTCTGCTGAGGAACCTTCCCCGGGTGAGCCCCGCTTCTCTCGAGCCTGGCACC 360
 G S L V S W R A F H G C D S A E E L P R V S P R F L R A W H

Sma I
 CCCCTCCCGTCTCAGCCAGGATGCCAACGAGCGCTGGGCCCCGGGCACCCAGTGTATCACCAAATGCGAGCACACCCGCCCAAGCCAG 450
 P P P V S A R H P T R R W A P G T Q C I T K C E H T R P K P

Stu I Kpn I
 GCGAGCTGGCCTTCCGCAAGGGCGACGTGGTCACCATCTCGAGGGCTGCGAGAACAAGAGCTGGTACCGCGTCAAGCACCACACCAAGT 540
 G E L A F R K G D V Y T I L E A C E N K S W Y R V K H H T S

SH3

Pvu II
 CACAGGAGGGGCTGCTGGCAGCTGGGGGCGCTGCGGGAGCGGGAGGCCCTCTCCGAGACCCCAAGCTCAGCCTCATGCCCTGGTTCCACG 630
 G Q E G L L A A G A L R E R E A L S A D P K L S L M P W F H

Pvu II Pst I
 CGAAGATCTCGGGCCAGGAGGCTGTCCAGCAGCTGCAGCCTCCGAGGATGGGCTGTTCTGGTGGGAGTCCGGCGGCCACCCCGGG 720
 G K I S G Q E A V Q Q L O P P E D G L F L V R E S A R H P G

SH2

Clal
 ACTACGCTCTGTGCGTGACCTTGGCCGCGACGTATCCACTACCGCGTGTGCACCGCGACGGCCACCTCACAATCGATGAGGCGGTGT 810
 D Y Y L C V S F G R D V I H Y R V L H R D G H L T I D E A V

TCTTCTGCAACCTCATGGACATGGTGGAGCATTACAGCAAGGACAAGGGCGCTATCTGCACCAAGCTGGTGAGACCAAAAGCGGAAACAG 900
 F F C N L M D M Y E H Y S K D K G A I C T K L V R P K R K H

Pst I
 GGACCAAGTGGGGGAGGAGGAGCTGGCCAGGGCGGGCTGGTTACTGAACCTGCAGCATTTGACATTGGGAGCACAGATCGGAGAGGGAG 990
 G T K S A E E E L A R A G W L L N L Q H L T L G A Q I G E G

Pst I Stu I
 AGTTTGGAGCTGTCTGCAGGGTCACTACCTGGGGCAAAAGGTGGCCGTGAAGAATATCAAGTGTGATGTGACAGCCAGGCTTCTCTGG 1080
 E F G A V L Q G E Y L Q Q K V A V K N I K C D Y T A Q A F L

TK

ACGAGACGGCGCTCATGACGAAGATGCAACACGAGAACCCTGGTGGCTCTCTGGGGGTGATCCTGCACAGGGCGCTGTACATTGTCTATGG 1170
 D E T A V M T K M Q H E N L V R L L G V I L H Q G L Y I V M

Sma I Pst I
 AGCAGTGAAGCAAGGGCAACCTGGTGAACCTTCTGCGGACCCGGGTGAGCCCTCGTGAACACCGCTCAGCTCTGCAGTTTCTCTCTGC 1260
 E H V S K G N L V N F L R T R G R A L V N T A Q L L Q F S L

FIGURE 1A

ACCTGGCCGACGGCATGGAGTACCTGGAGAGCAAGAAGCTTGTGCACCGCGACCTGGCCGCCCGCAACATCTGGTCTCAGAGGACCTGG 1350
H V A E G M E Y L E S K K L V H R D L A A R N I L V S E D L

TGCCCAAGGTCAGCGACTTTGGCCCTGGCCAAAGCCGAGCGGAAGGGGCTAGACTCAAGCCCGCTGCCCGTCAAGTGGAGCGGCCCGAGG 1440
V A K Y S D F G L A K A E R K G T D S S R L P V K W T A P E

Nde 1

CTCTCAAACACGGGAAGTTCACCAAGCAAGTCGGATGTCGAGGTTTGGGGTGCTGCTCTGGGAGGCTTCTCATATGGACGGGCTCCGT 1630
A L K H G K F T S K S D V W S F G V L L W E V F S Y G R A F

Kpn I

ACCTTAAATGCTACTGAAGAGGTTGTCGGAGGCGTGGAGAAGGGGTACCGCATGGAACCCCCCGAGGGCTGTCCAGGCCCGGTGCACG 1820
Y P K H S L K E V S E A V E K G Y R M E P F E G C F G P V H

Pvu II

Small

TCCTCATGAGCAGCTGCTCGGAGGCAGAGCCCGCCCGCCGCCACCCCTTCGCGAAACTGGCCGAGAAGCTGCCCGGGCAGCTACCGAGTG 1710
V L M S S C W E A E P I A R R P P F R K L A E K L I A R E L R S

CAGGTGCCCCAGCCTCGTCTCAGGGCAGGACGCGGCTCCACCTCGCCCCGAAGCCAGGAGCCCTGACCCACCCGGTGGGGCCCT 1800
A G A P A S V S G Q D A D G S T S P R S Q E P .

TGGCCCCAGAGGACCGAGAGAGTGGAGAGTGGGGCGTGGGGGCACTGACCAGGCCCAAGGAGGGTCCAGGCGGGCAAGTCATCCTCTCG 1890

TCCCCACAGCAGGGGCTGCCCCACCTAGGGGGCTCTGGGCGGCCCGTGGACACCCAGACCTCGGAAGGATGATCGCCCCGATAAAGACGG 1880

ATTCTAAGGACTCTAAAAA 2000

FIGURE 1B

CCGCTTTTTGCTTAGAGCTTGAGAGTCAAAG AGGACCCACATGTATACTTCGGCTCTAGCGAGT AGGATGATAATATGGATACA 90
M D T

AAATCTATTCTAGAAGAACTTCTTCTCAAAAGATCACAGCAAAAGAAGAAAATGTCACCAAATAATTACAAAGAACGGCTTTTTGTTTTG 180
K S I L E E L L L K R S Q Q K K K M S P N N Y K E R L F V L

ACCAAAACAAACCTTTCTACTATGAATATGACAAAATGAAAAGGGGCAGCAGAAAAGGATCCATTGAAATTAAGAAAATCAGATGTGTG 270
T K T N L S Y Y E Y D K M K R G S R K G S I E I K K I R C V

GAGAAAGTAAATCTCGAGGAGCAGACGCCTGTAGAGAGACAGTACCCATTTAGATTGTCTATAAGATGGGCTTCTCTATGTCTATGCA 360 PH
E K V N L E E Q T P V E R Q Y P F Q I V Y K D G L L Y V Y A

TCAAATGAAGAGAGCCGAAGTCAGTGGTTGAAAGCATTACAAAAAGAGATAAGGGGTAACCCCCACCTGCTGGTCAAGTACCATAGTGGG 450
S N E E S R S Q W L K A L Q K E I R G N P H L L V K Y H S G

TTCTTCGTGGACGGGAAGTTCTGTGTTGCCAGCAGAGCTGTAAAGCAGCCCCAGGATGTACCCTCTGGGAAGCATATGCTAATCTGCAT 540
F F V D G K F L C C Q Q S C K A A P G C T L W E A Y A N L H

ACTGCAGTCAATGAAGAGAAAACAGAGTTCACCTTCCAGACAGAGTGTGAAGATACCTCGGGCAGTTCTGTTCTCAAAATGGAT 630
T A V N E E K H R V P T F P D R V L K I P R A V P V L K M D

GCACCATCTTCAAGTACCCTCTAGCCCAATATGACAACGAATCAAAGAAAACTATGGCTCCAGCCACCATCTTCAAGTACCAGTCTA 720
A P S S S T T L A Q Y D N E S K K N Y G S Q P P S S S T S L SH3

CGGCAATATGACAGCAACTCAAAGAAAATCTATGGCTCCAGCCAACTTCAACATGCAGTATATTCCAAGGAAGACTTCCTGACTGG 810
A Q Y D S N S K K I Y G S Q P N F N M Q Y I P R E D F P D W

TGGCAAGTAAGAAAAGTAAAAGTAGCAGCAGCAGTGAAGATGTTGCAAGCAGTAACCAAAAAGAAAGAAATGTGAATCACACCACCTCA 900
W Q V R K L K S S S S S E D V A S S N Q K E R N V N H T T S

AAGATTTTCATGGGAATTCCTGAGTCAAGTTCATCTGAAGAAGAGGAAAACCTGGATGATTATGACTGGTTTGCTGGTAACATCTCCAGA 990
K I S W E F P E S S S S E E E E N L D D Y D W F A G N I S R

TCACAATCTGAACAGTTACTCAGACAAAAGGGAAAAGAAGGAGCATTATGGTTAGAAATTCGAGCCAAGTGGGAATGTACACAGTGTCC 1080 SH3
S Q S E Q L L R Q K G K E G A F H V R N S S Q V G M Y T V S

TTATTTAGTAAGGCTGTGAATGATAAAAAAGGAAGTGTCAAACATTACCAGTGCATACAAATGCTGAGAACAAATTATACCTGGCAGAA 1170
L F S K A V N D K K G T V K H Y H V H T N A E N K L Y L A E

AACTACTGTTTTGATTCCATTCCAAAGCTTATTCATTATCATCAACACAATTGAGCAGGCATGATCACACGGCTCCGCCACCCTGTGTCA 1260
N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S

ACAAAGGCCAACAAAGGTCCCCGACTCTGTGTCCCTGGGAAATGGAATCTGGGAACTGAAAAGAGAAGAGATTACCTTGTGAAGGAGCTG 1350
T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L

GGAAGTGGCCAGTTTGGAGTGGTCCAGCTGGGCAAGTGAAGGGGCAGTATGATGTTGCTGTTAAGATGATCAAGGAGGGCTCCATGTCA 1440
G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S

GAAGATGAATTCCTTTCAGGAGGCCAGACTATGATGAAACTCAGCCATCCCAAGCTGGTTAAATTCATGGAGTGTGTTCAAAGGAATAC 1530
E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y

CCCATATACATAGTGAATATATAAGCAATGGCTGCTTGTGAATTACCTGAGGAGTCACGGAAAAGGACTTGAACCTTCCCAGCTC 1620 Tk
P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L

TTAGAAATGTGCTACGATGTCTGTGAAGGCATGGCCTTCTTGGAGAGTCAACCAATTCATACACGGGACTTGGCTGCTCGTAAGTGTG 1710
L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L

GTGGACAGAGATCTCTGTGTGAAAGTATCTGACTTTGGAATGACAAGGTATGTTCTTGATGACCAGTATGTCAGTTTCAGTCGGAACAAAG 1800
Y D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K

FIGURE 2A

TTTCCAGTCAAGTGGTCAGCTCCAGAGGTGTTTCATTACTTCAAATACAGCAGCAAGTCAGACGTATGGGCATTGGGATCCTGATGTGG 1890
F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W

GAGGTGTTTCAGCCTGGGGAAGCAGCCCTATGACTTGTATGACAACTCCCAGGTGGTTCGAAGGTCTCCAGGGCCACAGGCTTTACCGG 1980
E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R

CCCCACCTGGCATCGGACACCATCTACCAGATCATGTACAGCTGCTGGCAGAGCTTCCAGAAAAGCGTCCCACATTTTCAGCAACTCCTG 2070
P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L

TCTTCCATTGAACCACTTCGGGAAAAAGACAAGCATTGAAGAAGAAATTAGGAGTGCTGATAAGAATGAATATAGATGCTGGCCAGCATT 2160
S S I E P L R E K D K H .

TTCATTCAATTTTAAGGAAAGTAGCAAGGCATAATGTAATTTAGCTAGTTTTTAATAGTGTCTCTGTATTGTCTATTATTAGAAATGAA 2250
CAAGGCAGGAAACAAAAGATTCCCTTGAAATTTAGGTCAAATTAGTAATTTTGTATTATGCTGCCCTGATATAACACTTTCCAGCCTATA 2340
GCAGAAGCACATTTTCAGACTGCAATATAGAGACTGTGTTTCATGTGTAAAGACTGAGCAGAACTGAAAAATTACTTATTGGATATTCATT 2430
CTTTTCTTTATATTGTCATTGTCACAACAATTAATATACTACCAAGTACAAAAAAAAAAAAAAAAAAAA 2500

FIGURE 2B

CCGGACTGGTCGAAAACAGGAACAGACTTGAAACAGGGGAGAGCTCCTGGCGAAACGAACAGCTGGAGGTTTTACCAGGGATAAGAAG 90
 AAAAGACACCTTCTAGTGAGCAGCTGCCAGCTCCTGCTCAGTTTTGCCTCGGGGTAGCACCTCCAGCCACAGAAAGCAAGCCGGTAAQ 180
 TCTCTCCAGGTAGGACTTGCTGCAACCCAGCTGCTGGACTGATCTGAAACGGGACTTTGCATACTCTCCGAAGTATGGTGAGTTGGTGCT 270
 H V S W C
 CACTTCAAAGTTGCCTGGTGAAGGAAGATAAGCTGGATCGCAGAGACTAAGGGGAGAGGGAGAAGCCCTGCTCCTCTTCTCCCCACCAAG 360
 GCACAATGAGCAACATCTGTGAGAGGCTCTGGGAGTACCTAGAACCCCTATCTCCCTGTTTGTCCACGGAGGCAGACAAGTCAACCGTGA 450
 M S N I C O R L W E Y L E P Y L P C L S T E A D K S T V
 TTGAAAATCCAGGGGCTCTTCTCTCCCACTCAGAGGGCATGGCCACTACTTTGTGGCTTTGTTTGATTACCAGGCTCGGACTGCTG 540
 I E N P G A L C S P O S Q R H G H Y F V A L F D Y Q A R T A
 AGGACTTGAGCTTCCGAGCAGGTGACAACTTCAAGTTCTGGACACTTTGCATGAGGGCTGGTGGTTTGCAGACACTTGGAGAAAAGAC 630
 E D L S F R A G D K L Q V L D T L H E G W W F A R H L E K R
 CAGATGGCTCCAGTCAGCAACTACAAGGCTATATTCCTTCTAATACCTGGCTGAGGACAGAAGCCTACAGGCAGACCCGTGGTTCTTTG 720
 R O G S S Q O L Q G Y I P S N Y V A E D R S L Q A E P W F F
 GACCAATCGGAAGATCAGATGCAGAGAAACAATATTATATTCAGAAAACAAGACCCGTTCTTTCTAATCAGAGAAAGTGAAGCCAAA 810
 G A I G R S D A E K O L L Y S E N K T G S F L I R E S E S O
 AAGGACAATTCTCTCTTTAGTGGAGCAAGTTGTAACCACTACAGAATTAAGAGCTGGATGAAGGGGATTTTCTCACCC 900
 K G E F S L S V L D G A V V K H Y R I K R L D E G G F F L T
 GAAGAAGAATCTTTCAACACTGAACGAATTTGTGAGCACTACACCAAGACAAGTGACGGCCTGTGTGTCAAGCTGGGGAACCATGCT 990
 R R R I F S T L N E F V S H Y T K T S D G L C V K L G K P C
 TAAAGATCCAGGTCCAGCTCCATTTGATTTGCTGATATAAACCGTGGACCAATGGGAGATAGACCGCAACTCCATACAGCTTCTGAAGC 1080
 L K I O V P A P F D L S Y K T V D Q W E I D R N S I Q L L K
 CATTGGGATCTGGTCAAGTTTGGCAAGTATGGGAAGGTCTGTGGACAATACCACTCCAGTAGCAGTGAAAACATTAAACCAAGTTCAA 1170
 R L G S G Q F G E V W E G L W N N T T P Y A V K T L K P G S
 TGGATCCAATGACTTCTGAGGGAGGCACAGATAATGAAGAACCTAAGACATCCAAGCTTATCCAGCTTTATGCTGTTTGCACCTTTAG 1260
 H D P N D F L R E A Q I K K N L R H P K L I Q L Y A V C T L
 AAGATCCAATTTATATTATTACAGAGTTGATGAGACATGGAAGTCTGCAAGAATATCTCCAAATGACACTGGATCAAAAATCCATCTGA 1350
 E D P I Y I I T E L M R H G S L Q E Y L O N D T G S K I H L
 CTCAACAGGTAGACATGCCGSCACAGGTTGCCTCTGGAATGGCCTATCTGGAGTCTCGGAACATACATTACAGAGATCTGGCTGCCAGAA 1440
 T Q O Y D H A A Q V A S G H A Y L E S R N Y I H R D L A A R
 ATGTCCTCGTTGGTGAACATAATATCTACAAAGTAGCAGATTTTGGACTTGCCAGAGTTTTTAAGGTAGATAATGAAGACATCTATCAAT 1530
 N Y L V G E H N I Y K V A D F G L A R V F K V D N E D I Y E
 CTAGACACGAAATAAAGCTGCCGGTGAAGTGGACTGCGCCCGAAGCCATTGCTAGTAATAAATTCAACATTAAGTCCGATGTATGGTCAT 1620
 S R H E I K L P V K W T A P E A I R S N K F S I K S D V W S
 TTGGAATCCTTCTTTATGAAATCATTACTTATGGCAAAATGCCTTACAGTGGTATGACAGGTGCCAGGTAATCCAGATGTTGGCTCAA 1710
 F G I L L Y E I I T Y G K M P Y S G H T G A Q V I Q M L A O
 ACTATAGACTTCCGCAACCATCCAATGTCCACAGCAATTTTACAACATCATGTTGGAGTGTGGAATGCAGAGCCTAAGGAACGACCTA 1800
 N Y R L P Q P S N C P Q Q F Y N I K L E C W N A E P K E R P

SH3

SH2

Tk

FIGURE 3A

CATTGAGACACTGCGTTGGAAACTTGAAGACTATTTTGAACAGACTCTTCATATTCAGATGCAAATAACTTCATAAGATGAACACTGG 1890
 I F E T L R W K L E D Y F E T D S S Y S D A N N F I R .
 AGAAGAATATCAAATAATAAAGTAGCAAAACAAATTCAAATAATCCATTCCAAAATACAATGTTATCAACCAACTGCACAATCAGTTTAT 1980
 CCTGACATATTCAGTGATAGGATAAAGTTGGCCATGTATTATGAAAAAGATTATTTGTGCATTTTATTGACTGGGCAACACTGCAGGAC 2070
 AGTCAAGGTCATATATAATTGCTCACTGCCTGGAAAATTAAGCACACTAAACCAAGTTATTTTCTTTTAAAGAGATACTTACATTTCCA 2160
 TTTATTGTTTGAATGTGCGCATCAAGAGAATCAACAGATGATAGTCCAATTTTACTCAGTCACTGACTGTGTAGCATTTTCTCTGTTTAC 2250
 TGATTAGAGTGGTTATTCATTATTCCTCAGATTGCTGAATCCCATCAGGCTGTTATTATGAAGGAATTTGATTGCTTTGCTGCACAGCAG 2340
 GACCTGTCTTTGAGATTTTTTTTCTCTTTTAAATATCCTGTAACCTACAATCATGGTAAAGCCATGTTAAATGACTTCATTGTACTTG 2430
 GACTAATTGCACATTTTTTTCTATGCATAAAAAAATGATGCAGCTGTTGAGAAAACGAAGTCTTTTTTCATTTTGCAGAAGGAAATGATGG 2520
 AATTTTTCTGTACTTCAGTATGTGTCAACTGAGAGTCATATACATTAGTTTTAATCTCTTAATATTGAGAATCAGGTTGCAAAACGGATG 2610
 AGTTATTATCTATGCAAAATGTGAGAAATGTCTAATAGCCCATAAAGCTGAGAAATAGGTATCAAAATAGTTTAGGAAAATGAGAGGAGA 2700
 ACAGTAGGATTGCTGTGSCCTAGACTTCTGAGTAATTAATAAGAAAAAGAAGTACCAAAAAAAAAAAAAA 2770

FIGURE 3B

Expression of MKK1 and MKK2

		<u>MKK1</u>	<u>MKK2</u>
Human			
Meg/Eryth	Meg-01	+++	+++
	K562	++	+
	Mo7e	++	+
	HEL	+++	++
Myelo/Mac	KG-1	+	++
	HL-60	+	+
	TF-1	+	+
B-cell	ALL-1	-	+
	Raji	-	-
	Daudi	-	-
T-cell	Molt-3	-	-
	Jurkat	-	-
Epithelial	Hela	-	-
Rodent			
	BM	+	+++
	Spleen	+++	+
	Thymus	-	-
	Liver	-	-
	Brain	+	-
rat neural	P19	+	-

FIGURE 4

Immunoprecipitation Of In Vitro Transcribed Translated MKK1 And MKK2 Proteins

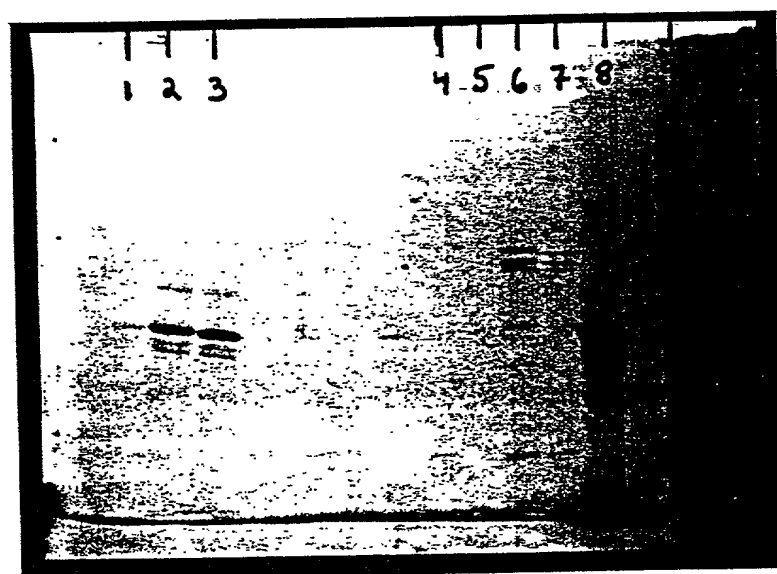


FIGURE 5

Antisense MKK1 Expression Suppresses AChE Production In Primary Murine Bone Marrow Cultures

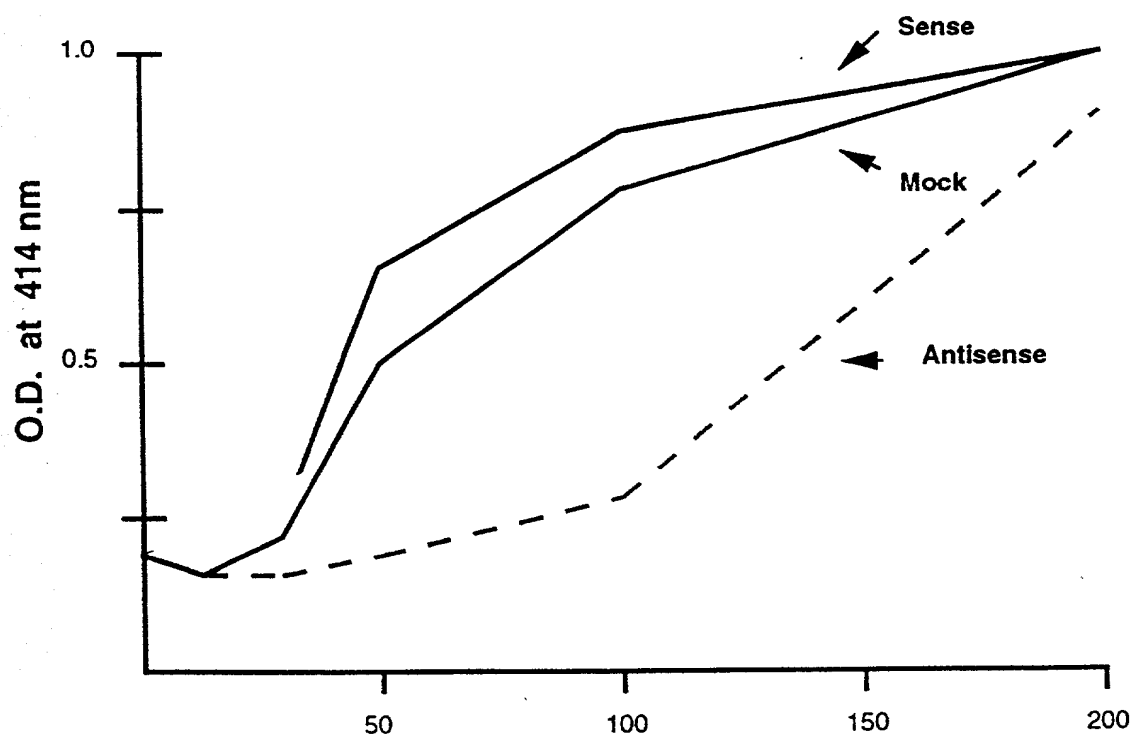


FIGURE 6A

Cell Number x $10^3/200$ ul

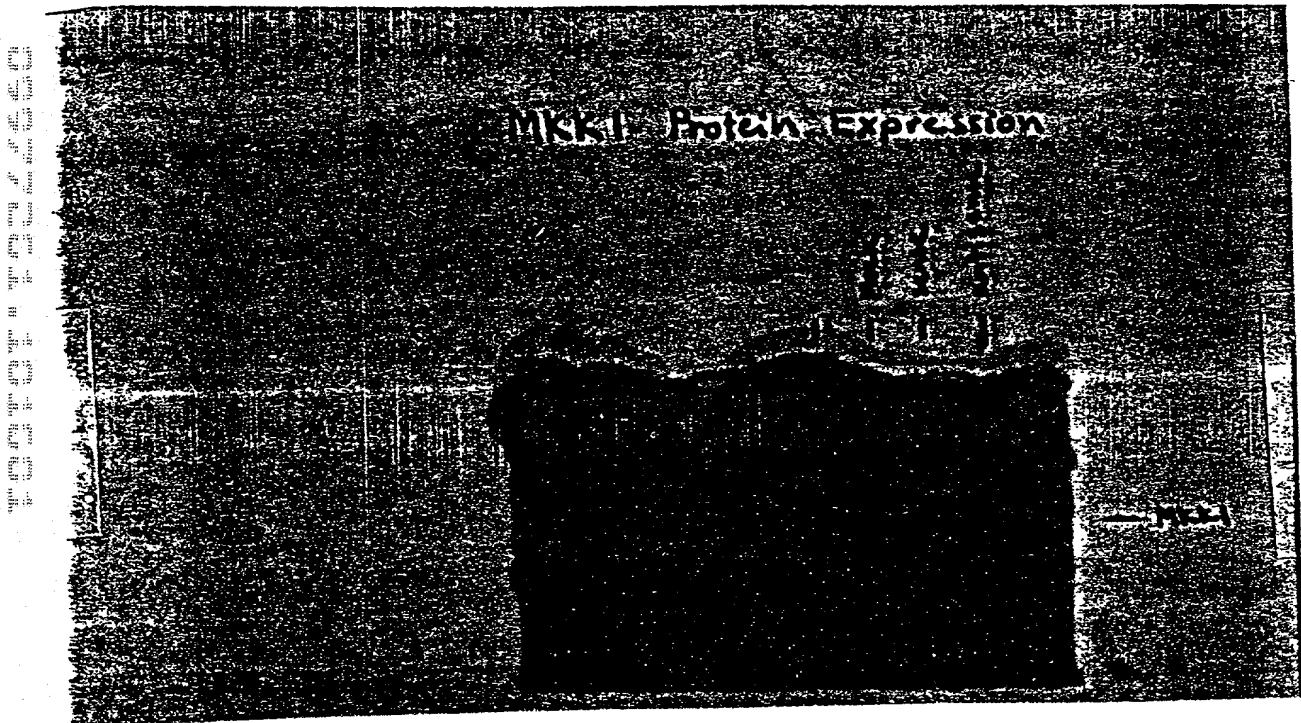


FIGURE 6B

MKK2 AND MKK3 AUTOPHOSPHORYLATE TRANSPHOSPHORYLATE PROTEINS WHEN EXPRESSED IN BACTERIA

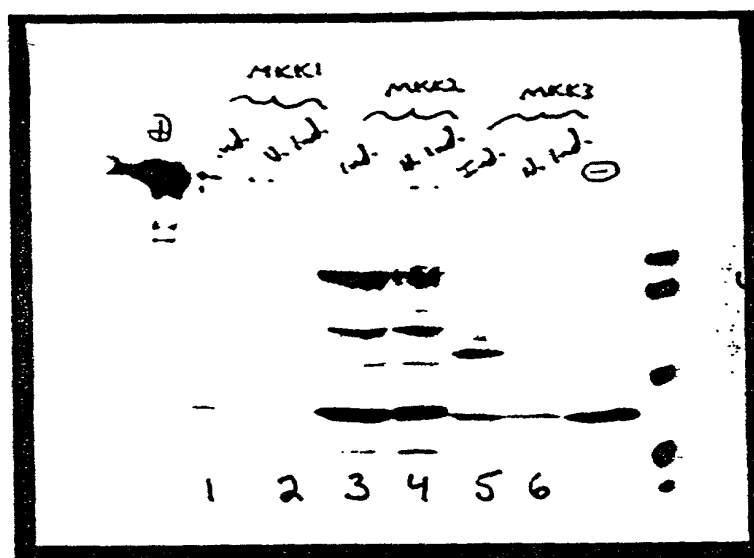


FIGURE 7

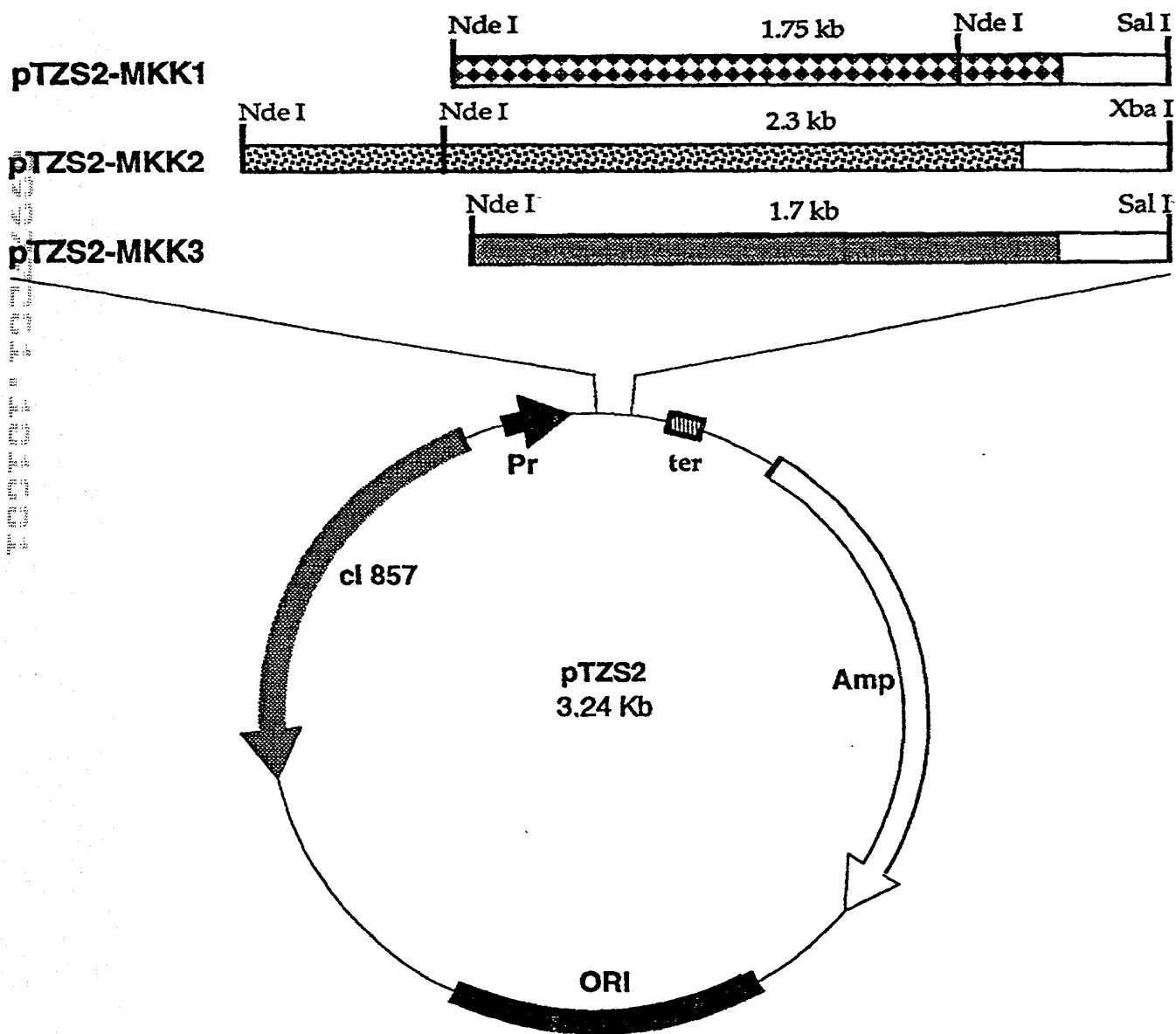


FIGURE 8

1 MAGRGSLVSWRAFHGCDSEELPRVSPRFL MKK1 aa
1 MSAIQAA----- hCSK (JH0559)

31 RAWHPPPV SARMPTRRWAPGTOCITKCEHT MKK1 aa
8 -----WPSGT ECI AKYNFH hCSK (JH0559)

61 RPKPGELAFRKGDVVITLEACENKSWYRVK MKK1 aa
22 GTAEQDLPECKGDVLTIVAVTKDPNWKAK hCSK (JH0559)

91 HHTSGOEGLLAAGALREREALSDPKLSLM MKK1 aa
52 NKV-GRREGIIPANYVQKREGVKAGTKLSLM hCSK (JH0559)

121 PWFHGKISGOEAVOOLOPPEDGLFLVRESA MKK1 aa
81 PWFHGKI TREQAERLLYPPE TGLFLVRES T hCSK (JH0559)

151 RHPGDYVLCVSFGRDVIHYRVLHRDGH LTI MKK1 aa
111 NYPGDY T LCVS CDGKV EHYR IMYHASK LSI hCSK (JH0559)

181 DEAVFFCNLM DMVEHYSKDKGAICTKLVRP MKK1 aa
141 DEEVYFENLMQLVEHYTSDADGLCTRLIKP hCSK (JH0559)

211 KRKHGTSKSAEEELARAGWLLNLOH LTLGAO MKK1 aa
171 KVMEGTVA AQDE FYRSGWALNMKEL KLLQT hCSK (JH0559)

241 IGEGEFGAVLOGEYLGOKVAVKN IKCDVTA MKK1 aa
201 IGKG EFGD VMLG DYRG NKVAVK CIKNDATA hCSK (JH0559)

271 QAF LDETA VM TKMOHENLVRL LGVILHQ) - - MKK1 aa
231 QAF LAEASVMTQLRH SNLVQL LGVIVEEKG hCSK (JH0559)

299 GLYIVMEHVSKGNLVNFLRTRGRALVNTAO MKK1 aa
261 GLYIVTEYMAKGS LV DYLRSRGRSVLG GDC hCSK (JH0559)

329 LLOFSLHVAEGMEYLESKKLVHRDLAARNI MKK1 aa
291 LLKFSLDVC EAMEYLEGN NFVHRDLAARNV hCSK (JH0559)

359 LVSEDLVAKVSD FGLAKAERKGLDSSRLPV MKK1 aa
321 LVSEDNVAKVSD FGLTK EASSTQDTGKL PV hCSK (JH0559)

389 KWTAPEALKHGKFTSKSDVWSFGVLLWEVF MKK1 aa
351 KWTAPEALREKKFSTKSDVWSFG ILLWEIY hCSK (JH0559)

419 SYGRAPYPKMSLKEVSEAVEKGYRMEPPEG MKK1 aa
381 SFGRVPYPRIPLKDVVPRVEKGYKMDAPDG hCSK (JH0559)

449 CPGPVHVLMS SCWEAEPARRPPFRKLA EK L MKK1 aa
411 CPPAVYEV MKN CWH L D A M R P S F L Q L R E Q L hCSK (JH0559)

479 ARELRSAGAPASVSGODADGSTSPRSQEP MKK1 aa
441 EH-----IKTHELH-----L hCSK (JH0559)

FIGURE 9

1 MDTKSIILEELLKRSQQKKKMSPNNYKERL MKK2 aa
1 MAA-VILESI FLKRSQQKKKTSP LNFKKRL hAtk (X58957)
1 MNNFILLLEEQLIKKSQQKRRTSP SNFKVR F hTKT (L10717)
1 MMV - - - - - mTec (X5663)

31 FVLTKTNLSYYE - - YDKMKRGS RKGSIEI K MKK2 aa
30 FLVTVHKLSYYEYDFERGRGRGSK KGSIDVE hAtk (X58957)
31 FVLTKASLALYFEDR - - HGKKRRTL KGSIELS hTKT (L10717)
4 - - - - - mTec (X5663)

59 KIRCVVEKVNL EEQT PVERO - - - - - MKK2 aa
60 KITCVETVVP EKNPP PERO IPRRGEESSEM hAtk (X58957)
59 RIKCVEIIVKSD - - - - - hTKT (L10717)
4 - - - - - mTec (X5663)

78 - - - - - YPFQIVYKDGLLYVYASNEE MKK2 aa
90 EQISIIERFPYPFQVVYDEGP LYVFSPT EE hAtk (X58957)
70 - - ISI PCHYKY PFOVVH DNYLLYVFAPDRE hTKT (L10717)
4 - - - - - SF P VKINFHSSP - - - - - Q mTec (X5663)

98 SRSQWLKALQKEIRGNPHLLVKYHSGFFVD MKK2 aa
120 LRKRWIHQ LKNVIRYNSDLVQKYHP CFWID hAtk (X58957)
98 SRQRWV LALKEETRNNNN SLVPKYHPNFWMD hTKT (L10717)
17 SRDRWVKKLKEETIKNNNN NIMI KYHPKFWAD mTec (X5663)

128 GKFLCCQ QSCKAAPGC TLWEAYANLHTAVN MKK2 aa
150 GQYLCCSQ TAKNAMGCQILENRNGSLKPGS hAtk (X58957)
128 GKWRCCSQ LEKLATGCAQYD - - - - - P hTKT (L10717)
47 GSYQC CROTEKLAPGC EKYNFLFESSI - - - - - mTec (X5663)

158 EEKHRVP TFPDRVLKI PRAVPV LKMDA P S S MKK2 aa
180 SHRKTKKPLPP - - - - - TPEEDQI LKKPLPPE hAtk (X58957)
149 TKNASKKPLPP - - - - - TPEDNR - - - - - hTKT (L10717)
73 - - - - - RKTLP P - - - - - APE - - - - - I KKR R P P - mTec (X5663)

188 STTLAQYDNE SKKNYGSQPPSSSSTSLAQYD MKK2 aa
206 PAAA P VSTSELKK - - - - - VVALYD hAtk (X58957)
166 - - RPLWEPEETV - - - - - VIALYD hTKT (L10717)
89 PPIPEEENTE EI - - - - - VVAMYD mTec (X5663)

218 SNSKKIYGSQPNFNMQYIPREDFP - DWVQV MKK2 aa
225 YMPMNANDLOLRKGDEYFILEESNL PWWRA hAtk (X58957)
182 YQTNDPQELALRRNEEYCLLDSSSEIHWWRV hTKT (L10717)
108 FOATEAHDLRLERGOEYIILEKNDLHWWRA mTec (X5663)

247 RKLKSSSSSEEDVAS SNQKE RNVNHTTSKIS MKK2 aa
255 RD - - KNGQEGYIPSNYVTE - A - - - - - hAtk (X58957)
212 QD - - RNGHEGYVPSSYLVEKS - - - - - hTKT (L10717)
138 RD - - K - - - - - - - - - - - mTec (X5663)

277 WEFPESSSSSEEE EENLDDYDWFAGNISRSQS MKK2 aa
273 - - - - - EDSIEM YEWYS K HMTRSQA hAtk (X58957)
231 - - - - - PNNLETYEWNK SISRDKA hTKT (L10717)
141 - - - - - YGWYCRNTNRSKA mTec (X5663)

307 EQLLRQKGKEGA FMVRN SSOVGMYTVSLFS MKK2 aa
292 EQLLKQEGKEGGFI VRDSSSKAGKYTVSVFA hAtk (X58957)
250 EKLLLD T GKEGA FMVRD SRTAGTYTVSVFT hTKT (L10717)
154 EQLLRTE DKEGGFMVRDSSOPGLYTVSLYT mTec (X5663)

FIGURE 10A

337 K - A V N D K K G T V K H Y H V H - - T N A E N K L Y L A E MKK2 aa
 322 K S T - G D P Q G V I R H Y V V - - C S T P O S Q Y Y L A E hAtk (X58957)
 280 K A V V S E N N P C I K H Y H I K E T N D N P K R Y Y V A E hTKT (L10717)
 184 K F G - G E G S S G F R H Y H I K E T A T S P K K Y Y L A E mTec (X5663)

364 N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S MKK2 aa
 349 K H L F S T I P E L I N Y H Q H N S A G L I S R L K Y P V S hAtk (X58957)
 310 K Y V F D S I P L L I N Y H O H N G G L V T R L R Y P V C hTKT (L10717)
 213 K H A F G S I P E I I E Y H K H N A A G L V T R L R Y P V S mTec (X5663)

394 T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L MKK2 aa
 379 Q Q N K N A P S T A G L G Y G S W E I D P K D L T F L K E L hAtk (X58957)
 340 F G R Q K A P V T A G L R Y G K W V I D P S E L T F V Q E I hTKT (L10717)
 243 T K G K N A P T T A G F S Y D K W E I N P S E L T F M R E L mTec (X5663)

424 G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S MKK2 aa
 409 G T G Q F G V V K Y G K W R G O Y D V A I K M I K E G S M S hAtk (X58957)
 370 G S G Q F G L V H L G Y W L N K D K V A I K T I R E G A M S hTKT (L10717)
 273 G S G L F G V V R L G K W R A O Y K V A I K A I R E G A M C mTec (X5663)

454 E D E F F O E A Q T M M K L S H P K L V K F Y G V C S K E Y MKK2 aa
 439 E D E F I E E A K V M M N L S H E K L V Q L Y G V C T K Q R hAtk (X58957)
 400 E D F I E E A E V M M K L S H P K L V Q L Y G V C L E Q A hTKT (L10717)
 303 E D F I E E A K V M M K L T H P K L V Q L Y G V C T Q Q K mTec (X5663)

484 P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L MKK2 aa
 469 P I F I I T E Y M A N G C L L N Y L R E M R H R F Q T Q Q L hAtk (X58957)
 430 P I C L V F E F M E H G C L S D Y L R T Q R G L F A A E T L hTKT (L10717)
 333 P I Y I V T E F M E R G C L L N F L R Q R Q G H F S R D M L mTec (X5663)

514 L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L MKK2 aa
 499 L E M C K D V C E A M E Y L E S K O F L H R D L A A R N C L hAtk (X58957)
 460 L G M C L D V C E G M A Y L E E A C V I H R D L A A R N C L hTKT (L10717)
 363 L S M C Q D V C E G M E Y L E R N S F I H R D L A A R N C L mTec (X5663)

544 V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K MKK2 aa
 529 V N D Q G V V K V S D F G L S R Y V L D D E Y T S S V G S K hAtk (X58957)
 490 V G E N Q V I K V S D F G M T R F V L D D Q Y T S S T G T K hTKT (L10717)
 393 V N E A G V V K V S D F G M A R Y V L D D Q Y T S S S G A K mTec (X5663)

574 F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W MKK2 aa
 559 F P V R W S P P E V L M Y S K F S S K S D I W A F G V L M W hAtk (X58957)
 520 F P V K W A S P E V F S F S R Y S S K S D V W S F G V L M W hTKT (L10717)
 423 F P V K W C P P E V F N Y S R F S S K S D V W S F G V L M W mTec (X5663)

604 E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R MKK2 aa
 589 E I Y S L G K M P Y E R F T N S E T A E H I A Q G L R L Y R hAtk (X58957)
 550 E V F S E G K I P Y E N R S N S E V V E D I S T G F R L Y K hTKT (L10717)
 453 E I F T E G R M P F E K N T N Y E V V T M V T R G H R L H R mTec (X5663)

634 P H L A S D T I Y O I M Y S C W H E L P E K R P T F Q Q L L MKK2 aa
 619 P H L A S E K V Y T I M Y S C W H E K A D E R P T F K I L L hAtk (X58957)
 580 P R L A S T H V Y O I M N H C W K E R P E D R P A F S R L L hTKT (L10717)
 483 P K L A T K Y L Y E V M L R C W Q E R P E G R P S F E D L L mTec (X5663)

664 S S I E P L R E K D K H MKK2 aa
 649 S N I L D V M D E E S hAtk (X58957)
 610 R Q L A E I A E S - - - G L hTKT (L10717)
 513 R T I D E L V E C E E T F G R mTec (X5663)

FIGURE 10B

1 M S N I C Q R L W E - - - - - M K K 3 M P I a a
1 M G C V Q C K D K E A - T - - - K L T E E R D G S L N Q - S hFyn
1 M G C V H C K E K I S - G - - - K G Q G G S G T G T P A - H cYrk
1 M G S N K S K P K D A - S Q R - R R S L E P A E N V H G - A hSrc
1 M G C I K S K E N K S - P A I - K Y R P E N T P E P V S - T hYes
1 M G C V F C K K L E P - V A T A K E D A G L E G D F R S Y G hFgr
1 M G C I K S K G K D S L S D D G V D L - K T Q P V R N T E R hLyn
1 M G S M K S K - - - F L Q V G G N T F S K T E T S A S P H C hHck
1 M G C G C S S - - - H P E D D W M E N I D V C E N C H Y hLck
1 M G L L S S K R Q V S E K G K G W S P V K I R T Q D K A P P mBlk

11 - - - - - Y L E P M K K 3 M P I a a
26 S G Y R Y G T D P T P Q H Y P S F G V T S I P N - - Y N N F hFyn
26 P P S Q Y D P D T - Q L S G A F - - T H I P D - - F N N F cYrk
28 G G A F P A S O T P S K P A S A D G H R G P S A A F A P A hSrc
28 S V S H Y G A E P T T V S P C P S S S A K G T A V N F S S L hYes
30 A A D H Y G P D P T K A R P A S - S F A H I P N - - Y S N F hFgr
30 T I Y V R D P T S N K Q Q R P V P E S Q L L P G Q R F Q T K hLyn
28 P V Y V P D P T S T I K P G P N S H N S N T P G I R - - - hHck
26 P I V P L D G K G T L L I R N G S E V R D - P L V T Y E G S hLck
31 P L P P L V V F N H L A P P S P N Q - - - - - mBlk

15 Y L P C L S T E A D K S T V I E N P G A L C S P Q S Q R H G M K K 3 M P I a a
54 H A A - - - G G Q G L T V F G G V N - - S S S H T G T L R T hFyn
51 H A A - - - A V S P P V P F F S G P G F Y P C N T L Q A H S S cYrk
58 A A E P - - - - - K L F G G F N S S D T V T S P Q R A G hSrc
58 S M T P F G G S S G V T P F G G A S S S F S V V P S S Y P A hYes
57 S S Q A I N P G - - - - - F - - - - - L D S G T I R G hFgr
60 D P E E - - - - - Q G - - - - - hLyn
54 E A G S - - - - - E D - - - - - hHck
55 N P P A - - - - - S P L Q D - - - - - hLck
49 D P D E - - - - - E E - - - - - mBlk

45 H - - - - - Y F V A L F D Y Q A R T A E D L S F R A G D K M K K 3 M P I a a
79 R G G T G V T L F V A L Y D Y E A R T E D D L S F H K G E K hFyn
78 I T G G G V T L F I A L Y D Y E A R T E D D L S F Q K G E K cYrk
81 P L A G G V T T F V A L Y D Y E S R T E T D L S F K K G E R hSrc
88 G L T G G V T I F V A L Y D Y E A R T T E D L S F K K G E R hYes
74 V S G I G V T L F I A L Y D Y E A R T E D D L T F T K G E K hFgr
66 - - - - - D I V V A L Y P Y D G I H P D D L S F K K G E K hLyn
60 - - - - - I I V V A L Y D Y E A I H H E D L S F Q K G D Q hHck
64 - - - - - N L V I A L H S Y E P S H D G D L G F E K G E Q hLck
55 - - - - - R F V V A L F D Y A A V N D R D L Q V L K G E K mBlk

69 L Q V L D T L H E G W W F A R H L E K R R D G S S Q Q L Q G M K K 3 M P I a a
109 F Q I L N S S E G D W W E A R S L T T G E T G - - - - - hFyn
108 F H I I N N T E G D W W E A R S L S S G A T G - - - - - cYrk
111 L Q I V N N T E G D W W L A H S L S T G Q T G - - - - - hSrc
118 F Q I I N N T E G D W W E A R S I A T G K N G - - - - - hYes
104 F H I L N N T E G D W W E A R S L S S G K T G - - - - - hFgr
90 M K V L E E H - G E W W K A K S L L T K K E G - - - - - hLyn
84 M V V L E E S - G E W W K A R S L A T R K E G - - - - - hHck
88 L R I L E Q S - G E W W K A Q S L T T G Q E G - - - - - hLck
79 L Q V L R S T - G D W W L A R S L V T G R E G - - - - - mBlk

FIGURE 11A

99	Y I P S N Y V A E D R S L Q A E P W F F G A I G R S D A E K	MKK3 MPI aa
132	Y I P S N Y V A P V D S I Q A E E W Y F G K L G R K D A E R	hFyn
131	Y I P S N Y V A P V D S I Q A E E W Y F G K I G R K D A E R	cYrk
134	Y I P S N Y V A P S D S I Q A E E W Y F G K I T R R E S E R	hSrc
141	Y I P S N Y V A P A D S I Q A E E W Y F G K M G R K D A E R	hYes
127	C I P S N Y V A P V D S I Q A E E W Y F G K I G R K D A E R	hFgr
112	F I P S N Y V A K L N T L E T E E W F F K D I T R K D A E R	hLyn
106	Y I P S N Y V A R V D S L E T E E W F F K G I S R K D A E R	hHck
110	F I P F N F V A K A N S L E P E P W F F K N L S R K D A E R	hLck
101	Y V P S N F V A P V E T L E V E K W F F R T I S R K D A E R	mBlk
129	Q L L Y S E N K T G S F L I R E S E S Q K G E F S L S V L D	MKK3 MPI aa
162	Q L L S F G N P R G T F L I R E S E T T K G A Y S L S I R D	hFyn
161	Q L L C H G N C R G T F L I R E S E T T K G A Y S L S I R D	cYrk
164	L L L N A E N P R G T F L V R E S E T T K G A Y C L S V S D	hSrc
171	L L L N P G N Q R G I F L V R E S E T T K G A Y S L S I R D	hYes
157	Q L L S P G N P Q G A F L I R E S E T T K G A Y S L S I R D	hFgr
142	Q L L A P G N S A G A F L I R E S E T L K G S F S L S V R D	hLyn
136	Q L L A P G N M L G S F M I R D S E T T K G S Y S L S V R D	hHck
140	Q L L A P G N T H G S F L I R E S E S T A G S F S L S V R D	hLck
131	Q L L A P M N K A G S F L I R E S E S N K G A F S L S V K D	mBlk
159	- - - - G A V V K H Y R I K R L D E G G F F L T R R R I F	MKK3 MPI aa
192	W D D M K G D H V K H Y K I R K L D N G G Y Y I T T R A Q F	hFyn
191	W D E A K G D H V K H Y K I R K L D S G G Y Y I T T R A Q F	cYrk
194	F D N A K G L N V K H Y K I R K L D S G G F Y I T S R T Q F	hSrc
201	W D E I R G D N V K H Y K I R K L D N G G Y Y I T T R A Q F	hYes
187	W D Q T R G D H V K H Y K I R K L D M G G Y Y I T T R V Q F	hFgr
172	F D P V H G D V I K H Y K I R S L D N G G Y Y I S P R I T F	hLyn
166	Y D P R Q G D T V K H Y K I R T L D N G G F Y I S P R S T F	hHck
170	F D Q N Q G E V V K H Y K I R N L D N G G F Y I S P R I T F	hLck
161	I T T - Q G E V V K H Y K I R S L D N G G Y Y I S P R I T F	mBlk
184	S T L N E F V S H Y T K T S D G L C V K L G K P C L K I Q V	MKK3 MPI aa
222	E T L Q Q L V Q H Y S E R A A G L C C R L V V P C H K G M -	hFyn
221	D T I Q Q L V Q H Y I E R A A G L C C R L A V P C P K G T -	cYrk
224	N S L Q Q L V A Y Y S K H A D G L C H R L T T V C P T S K -	hSrc
231	D T L Q K L V K H Y T E H A D G L C H K L T T V C P T V K -	hYes
217	N S V O E L V Q H Y M E V N D G L C N L L I A P C T I M K -	hFgr
202	P C I S D M I K H Y Q K Q A D G L C R R L E K A C I S P K -	hLyn
196	S T L O E L V D H Y K K G N D G L C O K L S V P C M S S K -	hHck
200	P G L H E L V R H Y T N A S D G L C T R L S R P C Q T Q K -	hLck
190	P T L O A L V O H Y S K K G D G L C O K L T L P C V N L A -	mBlk
214	P A P F D L S Y K T V D Q W E I D R N S I Q L L K R L G S G	MKK3 MPI aa
251	P R L T D L S V K T K D V W E I P R E S L Q L I K R L G N G	hFyn
250	P K L A D L S V K T K D V W E I P R E S L Q L L Q K L G N G	cYrk
253	P Q T Q G L A - - - K D A W E I P R E S L R L E V K L G Q G	hSrc
260	P Q T Q G L A - - - K D A W E I P R E S L R L E V K L G Q G	hYes
246	P Q T L G L A - - - K D A W E I S R S S I T L E R R L G T G	hFgr
231	P Q - - - - K P W D K D A W E I P R E S I K L V K R L G A G	hLyn
225	P Q - - - - K P W E K D A W E I P R E S L K L E K K L G A G	hHck
229	P Q - - - - K P W W E D E W E V P R E T L K L V E R L G A G	hLck
219	P K - - - - N L W A Q D E W E I P R Q S L K L V R K L G S G	mBlk

FIGURE 11B

244 Q F G E V W E G L W N N T T P V A V K T L K P G S M D P N D MKK3 MPI aa
 281 Q F G E V W M G T W N G N T K V A I K T L K P G T M S P E S hFyn
 280 Q F G E V W M G T W N G T T K V A V K T L K P G T M S P E A cYrk
 280 C F G E V W M G T W N G T T R V A I K T L K P G T M S P E A hSrc
 287 C F G E V W M G T W N G T T K V A I K T L K P G T M M P E A hYes
 273 C F G D V W L G T W N G S T K V A V K T L K P G T M S P K A hFgr
 257 Q F G E V W M G Y Y N N S T K V A V K T L K P G T M S V Q A hLyn
 251 Q F G E V W M A T Y N K H T K V A V K T M K P G S M S V E A hHck
 255 Q F G E V W M G Y Y N G H T K V A V K S L K Q G S M S P D A hLck
 245 Q F G E V W M G Y Y K N N M K V A I K T L K E G T M S P E A mBlk

274 F L R E A Q I M K N L R H P K L I Q L Y A V C T L E D P I Y MKK3 MPI aa
 311 F L E E A Q I M K K L K H D K L V Q L Y A V V S - E E P I Y hFyn
 310 F L E E A Q I M K R L R H D K L V Q L Y A V V S - E E P I Y cYrk
 310 F L Q E A Q V M K K L R H E K L V Q L Y A V V S - E E P I Y hSrc
 317 F L Q E A Q I M K K L R H D K L V P L Y A V V S - E E P I Y hYes
 303 F L E E A Q V M K L L R H D K L V Q L Y A V V S - E E P I Y hFgr
 287 F L E E A N L M K T L Q H D K L V R L Y A V V T R E E P I Y hLyn
 281 F L A E A N V M K T L Q H D K L V K L H A V V T K E - P I Y hHck
 285 F L A E A N L M K Q L Q H Q R L V R L Y A V V T - Q E P I Y hLck
 275 F L G E A N V M K T L Q H E R L V R L Y A V V T R E - P I Y mBlk

304 I I T E L M R H G S L Q E Y L Q N D T G S K I H L T Q Q V D MKK3 MPI aa
 340 I V T E Y M N K G S L L D F L K D G E G R A L K L P N L V D hFyn
 339 I V T E F M S Q G S L L D F L K D G D G R Y L K L P Q L V D cYrk
 339 I V T E Y M S K G S L L D F L K G E T G K Y L R L P Q L V D hSrc
 346 I V T E F M S K G S L L D F L K E G D G K Y L K L P Q L V D hYes
 332 I V T E F M C H G S L L D F L K N P E G Q D L R L P Q L V D hFgr
 317 I I T E Y M A K G S L L D F L K S D E G G K V L L P K L I D hLyn
 310 I I T E F M A K G S L L D F L K S D E G S K Q P L P K L I D hHck
 314 I I T E Y M E N G S L V D F L K T P S G I K L T I N K L L D hLck
 304 I V T E Y M A R G C L L D F L K T D E G S R L S L P R L I D mBlk

334 M A A Q V A S G M A Y L E S R N Y I H R D L A A R N V L V G MKK3 MPI aa
 370 M A A Q V A A G M A Y I E R M N Y I H R D L R S A N I L V G hFyn
 369 M A A Q I A A G M A Y I E R M N Y I H R D L R A A N I L V G cYrk
 369 M A A Q I A S G M A Y V E R M N Y V H R D L R A A N I L V G hSrc
 376 M A A Q I A D G M A Y I E R M N Y I H R D L R A A N I L V G hYes
 362 M A A Q V A E G M A Y M E R M N Y I H R D L R A A N I L V G hFgr
 347 F S A Q I A E G M A Y I E R K N Y I H R D L R A A N V L V S hLyn
 340 F S A Q I A E G M A F I E Q R N Y I H R D L R A A N I L V S hHck
 344 M A A Q I A E G M A F I E E R N Y I H R D L R A A N I L V S hLck
 334 M S A Q V A E G M A Y I E R M N S I H R D L R A A N I L V S mBlk

364 E H N I Y K V A D F G L A R V F K V D N E D I Y E S R H E I MKK3 MPI aa
 400 N G L I C K I A D F G L A R L I - - - E D N E Y T A R Q G A hFyn
 399 D N L V C K I A D F G L A R L I - - - E D N E Y T A R Q G A cYrk
 399 E N L V C K V A D F G L A R L I - - - E D N E Y T A R Q G A hSrc
 406 E N L V C K I A D F G L A R L I - - - E D N E Y T A R Q G A hYes
 392 E R L A C K I A D F G L A R L I - - - K D D E Y N P C Q G S hFgr
 377 E S L M C K I A D F G L A R V I - - - E D N E Y T A R E G A hLyn
 370 A S L V C K I A D F G L A R V I - - - E D N E Y T A R E G A hHck
 374 D T L S C K I A D F G L A R L I - - - E D N E Y T A R E G A hLck
 364 E T L C C K I A D F G L A R I I - - - D S E Y T A Q E G A mBlk

FIGURE 11C

394	K	L	P	V	K	W	T	A	P	E	A	I	R	S	N	K	F	S	I	K	S	D	V	W	S	F	G	I	L	L	MKK3 MPI aa
427	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFyn
426	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	K	F	T	I	K	S	D	V	W	S	F	G	I	L	L	cYrk
426	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hSrc
433	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	Q	hYes
419	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFgr
404	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	C	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLyn
397	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	S	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hHck
401	K	F	P	I	K	W	T	A	P	E	A	I	N	Y	G	T	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLck
390	K	F	P	I	K	W	T	A	P	E	A	I	H	F	G	V	F	T	I	K	A	D	V	W	S	F	G	V	L	L	mBlk
424	Y	E	I	I	T	Y	G	K	M	P	Y	S	G	M	T	G	A	Q	V	I	Q	M	L	A	Q	N	Y	R	L	P	MKK3 MPI aa
457	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hFyn
456	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	Q	cYrk
456	T	E	L	T	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	D	Q	V	E	R	G	Y	R	M	P	hSrc
463	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hYes
449	T	E	L	I	T	K	G	R	I	P	Y	P	G	M	N	K	R	E	V	L	E	Q	V	E	Q	G	Y	H	M	P	hFgr
434	Y	E	I	V	T	Y	G	K	I	P	Y	P	G	R	T	N	A	D	V	M	T	A	L	S	Q	G	Y	R	M	P	hLyn
427	M	E	I	V	T	Y	G	R	I	P	Y	P	G	M	S	N	P	E	V	I	R	A	L	E	R	G	Y	R	M	P	hHck
431	T	E	I	V	T	H	G	R	I	P	Y	P	G	M	T	N	P	E	V	I	Q	N	L	E	R	G	Y	R	M	V	hLck
420	M	V	I	V	T	Y	G	R	V	P	Y	P	G	M	S	N	P	E	V	I	R	S	L	E	H	G	Y	R	M	P	mBlk
454	Q	P	S	N	C	P	Q	Q	F	Y	N	-	I	M	L	E	C	W	N	A	E	P	K	E	R	P	T	F	E	T	MKK3 MPI aa
487	C	P	Q	D	C	P	I	S	L	H	-	E	L	M	I	H	C	W	K	K	D	P	E	E	R	P	T	F	E	Y	hFyn
486	C	P	G	G	C	P	P	S	L	H	-	D	V	M	V	Q	C	W	K	R	E	P	E	E	R	P	T	F	E	Y	cYrk
486	C	P	P	E	C	P	E	S	L	H	-	D	L	M	C	Q	C	W	R	K	E	P	E	E	R	P	T	F	E	Y	hSrc
493	C	P	Q	G	C	P	E	S	L	H	-	E	L	M	N	L	C	W	K	K	D	P	D	E	R	P	T	F	E	Y	hYes
479	C	P	P	G	C	P	A	S	L	Y	-	E	A	M	E	Q	T	W	R	L	D	P	E	E	R	P	T	F	E	Y	hFgr
464	R	V	E	N	C	P	D	E	L	Y	-	D	I	M	K	M	C	W	K	E	K	A	E	E	R	P	T	F	D	Y	hLyn
457	R	P	E	N	C	P	E	E	L	Y	-	N	I	M	M	R	C	W	K	N	R	P	E	E	R	P	T	F	E	Y	hHck
461	R	P	D	N	C	P	E	E	L	Y	-	Q	L	M	R	L	C	W	K	E	R	P	E	D	R	P	T	F	D	Y	hLck
450	C	P	E	T	C	P	P	E	L	Y	N	D	I	I	T	E	C	W	R	G	R	P	E	E	R	P	T	F	E	F	mBlk
483	L	R	W	K	L	E	D	Y	F	E	-	T	D	S	S	Y	S	D	A	N	N	F	I	R						MKK3 MPI aa	
516	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L					hFyn	
515	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	D	N	-	-	-	Q					cYrk	
515	L	Q	A	F	L	E	D	Y	F	T	S	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L					hSrc	
522	I	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L					hYes	
508	L	Q	S	F	L	E	D	Y	F	T	S	A	E	P	Q	Y	Q	P	G	D	Q	-	-	-	T					hFgr	
493	L	Q	S	V	L	D	D	F	Y	T	A	T	E	G	Q	Y	Q	Q	-	-	Q	-	-	-	P					hLyn	
486	I	Q	S	V	L	D	D	F	Y	T	A	T	E	S	Q	Y	Q	Q	-	-	Q	-	-	-	P					hHck	
490	L	R	S	V	L	E	D	F	F	T	A	T	E	G	Q	Y	Q	P	-	-	Q	-	-	-	P					hLck	
480	L	O	S	V	L	E	D	F	Y	T	A	T	E	G	Q	Y	E	L	-	-	Q	-	-	-	P					mBlk	

FIGURE 11D

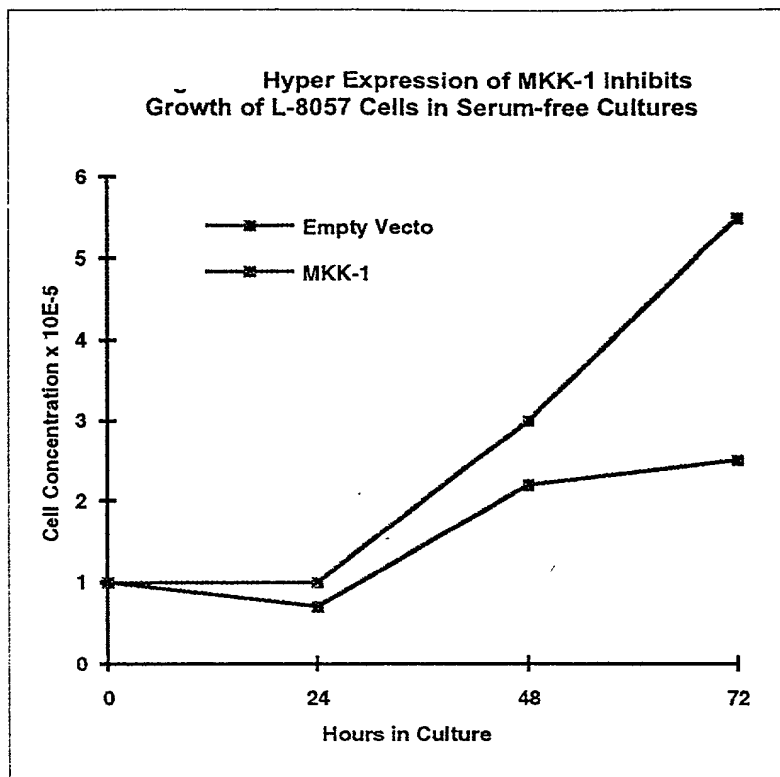


FIGURE 12

Growth Factor Response of MKK-1 Expressing L-8057 Cells

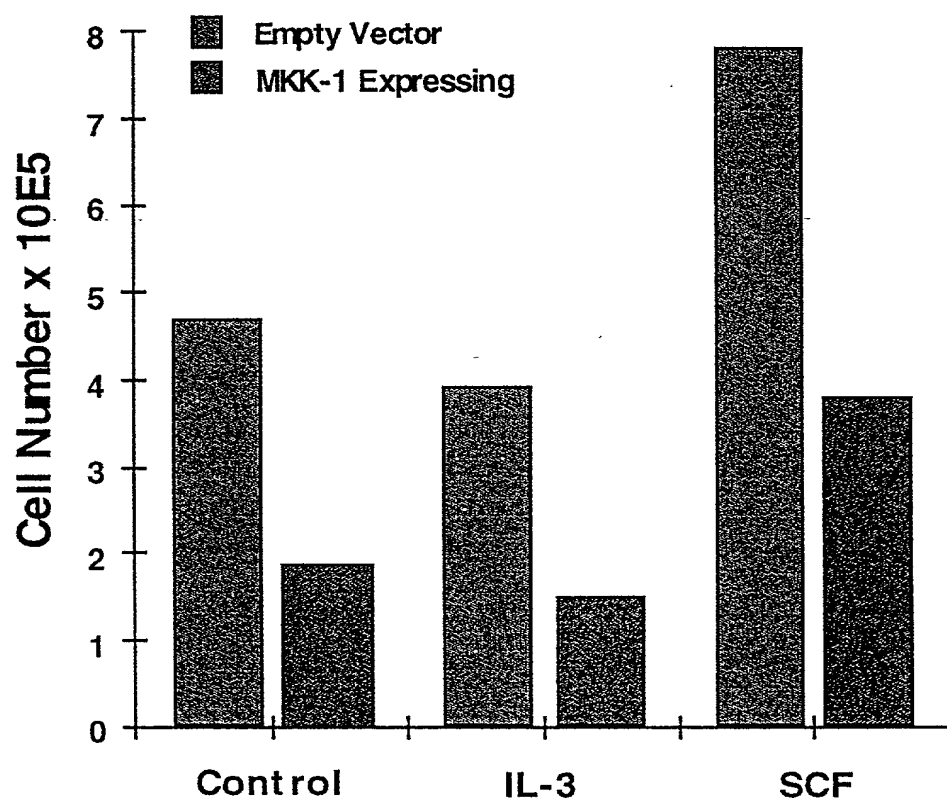


FIGURE 13

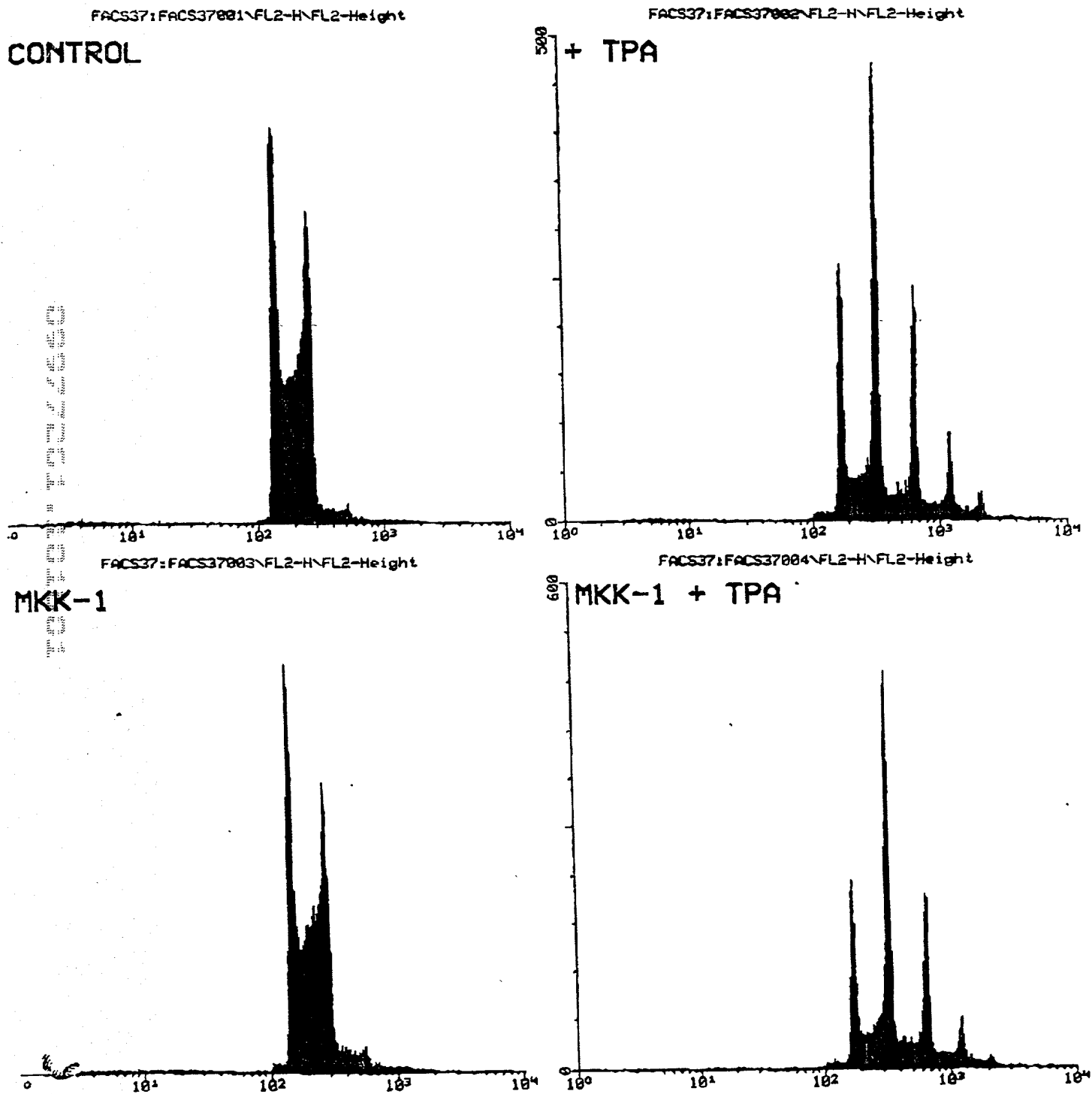


FIGURE 14